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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,887

07/12/2006

Keisuke Yoshida

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7634

23117

7590

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EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/585,887	<b>Applicant(s)</b> YOSHIDA ET AL.	
	<b>Examiner</b> MICHELLE R. CONNELLY CUSHWA	<b>Art Unit</b> 2874	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 15-23 is/are allowed.
- 6) ☒ Claim(s) 1,3-14 and 24-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/12/05, 11/30/07</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The prior art documents submitted by applicant in the Information Disclosure Statements filed on July 2, 005 and November 30, 2007 have all been considered and made of record (note the attached copies of form PTO-1449).

### ***Drawings***

Eight (8) sheets of formal drawings were filed on July 12, 2006 and have been accepted by the Examiner.

### ***Specification***

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Regarding claims 24-26; the claims depend from claim 2, which states "the black matrix is formed only above the inter-pixel region lying between the adjacent

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transmissive display regions and is not formed above the inter-pixel region lying between the adjacent reflective display regions" in the last 3 lines of claim 2. Claims 24-26 define a width of the black matrix material formed between the reflective display regions, however, there is no black matrix material formed between the reflective display regions, so it can not have a width.

Correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1-4, 7 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Koyama (US 6,958,793 B2).**

Regarding claim 1; Koyama discloses a LCD device comprising:

- a LCD panel (see Figures 1-3), wherein
- a liquid crystal (11) is supported by being sandwiched between a pair of electrode substrates (substrates 1 and 2 have electrodes 5 and 7 formed thereon, respectively), each having a plurality of pixel regions formed two-dimensionally thereon,

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- each pixel region has at least one transmissive display region (12) and at least one reflective display region (13);
- the transmissive display region is, in at least one side thereof, adjacent to a transmissive display region of an adjacent pixel region without interposing the reflective display region therebetween;
- the reflective display region is, in at least one side thereof, adjacent to a transmissive display region of an adjacent pixel region without interposing the transmissive display region therebetween;
- an inter-pixel region lying between the adjacent transmissive display regions and an inter-pixel region lying between the adjacent reflective display regions lie in a same straight line (see Figure 1);
- a black matrix (4a and 4b) is formed above the linear inter-pixel regions lying between the adjacent transmissive display regions and lying between the adjacent reflective display regions, wherein;
- the black matrix is formed to have a multiple width in such a way that the black matrix has a larger width (4a) above the inter-pixel region lying between the adjacent transmissive display regions (12) and has a smaller width (4b) above the inter-pixel region lying between the adjacent reflective display regions (13).

Regarding claim 3; the pixel region (see Figure 1), the transmissive display region (12) and the reflective display region (13) are all rectangular as seen in a plan view, and the pixel region is divided into a plurality of regions, so that the transmissive

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display region and the reflective display region are arranged in the plurality of divided regions.

Regarding claim 4; the pixel region (see Figure 1) is divided in an up/down or left/right direction, so that the transmissive display region (12) and the reflective display region (13) are alternately arranged in the two divided regions.

Regarding claim 7; the device includes a conductor portion formed between adjacent pixel regions in one electrode substrate (1) of the pair of electrode substrates and at least one tapered region producing a height difference between the transmissive and reflective display regions, the tapered regions being formed in another electrode substrate (2; see Figure 3), which faces the one electrode substrate, are arranged to overlap one another, as seen in a plan view (see Figures 1-3).

Regarding claims 11-13; see column 6, lines 19-26.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 5, 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama (US 6,958,793 B2).**

Regarding claims 5 and 6; Koyama does not disclose that the pixel is divided into three or four regions, however, one of ordinary skill in the art would have found it

obvious to divide the pixel into 3 or 4 divided regions so that the transmissive and reflective display regions alternate to improve the resolution of the resulting display.

Regarding claim 14; Koyama does not teach that the width of the black matrix formed above the inter-pixel region lying between the adjacent transmissive display regions is 18 micrometers and that the width of the black matrix formed above the inter-pixel region lying between the adjacent reflective display regions is 6 micrometers, however, it is within the level of ordinary skill in the art to select any desired width for the purpose of optimizing the performance of the LCD device, including 18 micrometers for the black matrix between transmissive regions and 6 micrometers for the black matrix between reflective regions, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (*In re Aller*, 105 USP 233), and that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

**Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama (US 6,958,793 B2) in view of Shimizu et al. (JP 2000-187220).**

Regarding claims 8 and 9; Koyama discloses a plan view for one pixel of a liquid crystal display device in Figure 1. The liquid crystal display device inherently includes a plurality of pixel arranged in a matrix. Koyama does not disclose the other details of the liquid crystal display device. Koyama goes on to teach that the disclosed pixel is for use in a transfective display device and that such devices are known in the art and cites Shimizu et al. as prior art disclosing a transfective display device (see column 1, lines

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5-10 and 34-45). Transflective displays includes pixel regions provided for each region surrounded by a scanning conductor and a signal conductor (72, 74; see Figures 1A and 1B of Shimizu et al.), wherein each pixel includes a transparent electrode (68 in Shimizu et al; 5, 7 in Koyama) formed in a transmissive display region (120T in Shimizu et al; 12 in Koyama), a reflective electrode (8 in Shimizu et al.; 69 in Koyama) formed in the reflective display region (120R in Shimizu et al.; 13 in Koyama), and a transistor element (TFT 71 in Shimizu et al.) that is formed near an intersection of the scanning conductor and the signal conductor (72, 74) and drives the transparent electrode and the reflective electrode according to a signal voltage fed from the signal conductor based on a scanning signal fed from the scanning conductor and that is covered by the reflective electrode. Thus, a transflective display, as known in the prior art, requires the signal and scanning conductors and the transistor elements located at an intersection thereof for each pixel in order to function properly and such an arrangement is disclosed by Shimizu et al. Therefore, one of ordinary skill in the art would have found it obvious to incorporate the pixel disclosed by Koyama in a transflective display having the claimed elements since Koyama teaches that the pixel is for use in a known transflective display.

Regarding claim 10; the black matrix disclosed by Koyama is formed around the periphery of the pixel, as are the scanning and signal conductors and therefore, the black matrix is formed above the scanning and signal conductors in the pixel arrangement suggested by Koyama.



***Allowable Subject Matter***

**Claims 2 and 15-23 are allowed.**

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose or suggest a LCD device, as defined in claim 2, wherein the black matrix is formed only above the inter-pixel region lying between the adjacent transmissive display regions and is not formed above the inter-pixel region lying between the adjacent reflective display regions in combination with the other limitations of claim 2. Claims 15-23 depend from claim 2.

***Conclusion***

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

/Michelle R. Connelly-Cushwa/  
Patent Examiner  
July 18, 2008